Petitioner
Grasslands Unlimited
663 N. 132nd Street PMB 7439
Omaha, NE 68154

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Doug Burgum
Secretary of the Interior
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240

Paul Souza,
Acting Director, U.S. Fish & Wildlife Service
1849 C Street NW
Washington, DC 20240

Caitlin Snyder
Chief, Branch of Domestic Listing
5275 Leesburg Pike
Baileys Crossroads, VA 22041
caitlin_snyder@fws.gov
via email

I. Introduction

This is a petition filed by Grasslands Unlimited ("GU") to list the plains spotted skunk (*Spilogale interrupta*) as threatened or endangered pursuant to the Endangered Species Act (16 USC §§ 1531 *et seq*) (the "ESA"). Despite a decision from the United States Fish and Wildlife Service ("USFWS") in September 2023 ("2023 Decision") that the plains spotted skunk did not warrant listing under the ESA, recent research and scientific information has come to light since that decision which compels reconsideration of species protections.

Grasslands Unlimited is a nonprofit 501(c)(3) organization dedicated to restoration and conservation of prairie and grassland ecosystems. Our members recreate, hunt, hike, and conduct research in prairies across the United States and have a deep-rooted interest in viewing all species of plants and wildlife, and in preventing the extinction of important and endemic prairie species.

This petition is filed pursuant to the ESA (16 USC § 1533(b)), implementing regulations (50 CFR § 424.14) and the Administrative Procedure Act (5 USC § 553(e)). All regulatory requirements have been met; a copy of the letter sent to all relevant state wildlife agencies, as well as an accounting of the recipients and the date of notice, is provided with this petition.

II. Regulatory Petition Requirements

The specific requirements for ESA petitions are governed by 50 CFR 424.14. This petition requests reconsideration of an analysis published by USFWS in 2023. As part of that decision, the USFWS conducted a Species Status Assessment (USFWS, 2022) ("2023 SSA") which adequately addressed much of the information by regulation. Therefore, this petition incorporates by reference the record for the 2023 Decision to satisfy the requirements of 50 CFR 424.14(c)(7) and 50 CFR 424.14(d)(4).

The ESA directs the Secretaries of Interior and Commerce to designate a list of endangered and threatened species that require protections. Endangered species are those "in danger of extinction throughout all or a significant portion of its range," (16 USC § 1532(6)) while threatened species are those "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." (16 USC § 1532(20)). The basis for such designation should be made using "best scientific and commercial data available." (16 USC § 1533(b)). The USFWS considered the plains spotted skunk for endangered status

previously and determined that protections were not warranted because "There are no geographic portions of the range in which the species is potentially endangered or threatened." (Endangered and Threatened, 2023). This decision was based on insufficient population data available at the time and the projected availability of suitable habitat. Since the publication of that decision, new scientific data have been published relating to plains spotted skunk populations and habitat preferences, which conclude that the plains spotted skunk is indeed in danger of extinction throughout all or a significant portion of its range. As such, USFWS should conduct a new analysis using the latest available scientific data.

III. Best Scientific Information

The ESA states that a species qualifies for protection if it faces "present or threatened destruction, modification, or curtailment of its habitat or range." (16 USC § 1533(a)(1)(A)). The USFWS determined in its 2023 Decision that the plains spotted skunk currently has resilient and redundant populations and that sufficient habitat exists now and will continue to exist into the future. However, new scientific data suggest that the species has low populations across much of its historic range, representing a curtailed range which inevitably will lead to low resiliency and low redundance. Additionally, research suggests that habitat suitability for the plains spotted skunk is influenced by factors currently threatening large swaths of grasslands habitat, including climate change and woody encroachment. These factors were not previously addressed in the 2023 SSA and the habitat and range of the species are likely to be much smaller than predicted.

A. The Plains Spotted Skunk Faces Present and Threated Curtailment of its Range

In its 2023 SSA, the USFWS said "[L]argely due to their extensive endemic range, plains spotted skunks have a high redundancy and are at a low risk for experiencing range wide

negative impacts from a catastrophic event at a given point in time." (USFWS, 2022). The agency bases its conclusion in part on the "relatively extensive range across the Great Plains" evidenced by the plains spotted skunk (USFWS, 2022). However, the conclusions of the 2023 SSA were tempered by the admission that "[the USFWS is] unable to accurately assess the number of populations and their distribution across the plains spotted skunks' endemic range." (USFWS, 2022).

Several statewide surveys have been conducted in the past three years that provide new information about the status of current plains spotted skunk populations and trends. In Kansas, intensive sampling was conducted from 2015 through 2023 by a team of researchers from Pittsburgh State University (Benson et al., 2024). A survey from 2016 to 2021 examined 26 counties and had 15 detections, for a detection rate of 0.07%. Subsequent surveys, including efforts in 2020 in two southeastern Kansas counties (1,111 trap nights) and from 2021-2023 across 18 counties (18,477 trap nights) yielded zero detections. The surveying sites were biased in favor of duplicating locations of previous occurrences. In total, only 18 occurrences of the plains spotted skunk have been recorded in Kansas since 2005, and none since 2020. Overall, the entire survey's detection rate was 0.04%, which was a decrease from the detection rate of previous surveys from 2005-2007 of 0.09%. (Benson et al, 2024).

In Nebraska, researchers from the University of Nebraska at Omaha conducted intensive surveying, using 61 cameras to monitor areas with the most recent plains spotted skunk occurrences. The surveying took place from October 2021 through May 2023 and resulted in zero occurrences of the plains spotted skunk. (Wilson & Sperfslage). Taken together, these two surveys at minimum suggest that plains spotted skunk populations are extremely low throughout two states that comprise a large portion of the species' historic range. The 2023 SSA also states

that “For populations to be resilient, they need … habitat that provides connectivity to allow for gene flow among subpopulations.” (USFWS, 2022). These new surveys suggest that any populations that do remain on the landscape may be highly fragmented and suffer from isolation: “The absence of [plains spotted skunk] observations from surrounding regions suggests that repatriation from neighboring populations may be unlikely … Potential loss of genetic diversity should be considered given the possibility that only low-density satellite populations remain.” (Benson et al., 2024, internal citations omitted).

The authors of these papers are clear about the implications of their findings. The Kansas paper concluded: “The results of our study emphasize the importance of continued conservation actions for the [plains spotted skunk], despite recent federal decisions not to list the species under the Endangered Species Act. We provide additional evidence that the [plains spotted skunk] may be extirpated from much of its former range in the central Great Plains.” The Nebraska project concluded that “Given the complete lack of spotted skunk evidence from recent surveys in Kansas and Nebraska (this study), the presence of this species in the prairie states is worrisome and should warrant a closer look at their status.” (Wilson & Sperfslage).

While it is difficult to discern using existing data whether some historical records were inflated due to landscape changes or surveying effort, it is equally difficult to credibly suggest that the current populations of plains spotted skunks reflect the species’ true natural baseline. How many formal surveys are sufficient to demonstrate that populations of the plains spotted skunk are dangerously low? To claim that demographic information remains insufficient would be to demand scientists and conservationists prove the complete extirpation of the plains spotted skunk, missing a critical window to conserve the species and obviating the purpose of ESA protections entirely. That these extensive surveys came up empty despite focusing on areas of

relatively recent skunk occurrences evidence a clear curtailment of its range. The continued decline of survey success rates further show that the plains spotted skunk is still decreasing and is in imminent danger of extinction throughout this portion of its range.

B. The Plains Spotted Skunk Faces Present and Threatened Curtailment of its Habitat

In the absence of reliable demographic information, the 2023 SSA relies "primarily on habitat factors to evaluate the resiliency of the species." (USFWS, 2022). As part of this analysis, the USFWS evaluated the projected existence of suitable habitat across the plains spotted skunk's endemic range using availability of fresh water, food, den sites, and complex habitat. (USFWS, 2022). Using only these factors, the 2023 SSA states that sufficient habitat persists now and will continue to persist into the future to maintain high redundancy and representation of plains spotted skunks such that protections are not warranted. However, recent research from South Dakota provides new details on the environmental factors that impact plains spotted skunk habitat suitability beyond the factors analyzed in the 2023 SSA, and indicate that the plains spotted skunk's range is not as robust as previously stated. Based on this new data, the range of the species is contracting such that it faces danger of extinction.

Specifically, plains spotted skunk suitability was tied to climate and landcover factors. The most important climactic factor was mean diurnal temperature range, indicating that the plains spotted skunk is sensitive to extreme temperature fluctuations. (White et al., 2024). As extreme weather events become more commonplace, these conclusions indicate that "climate destabilization may have negative effects on plains spotted skunks." (White et al., 2024). The 2023 SSA did not consider the impact of isolated extreme weather conditions. Given that the surveys mentioned above suggest that large swaths of suitable habitat are devoid of skunks,

random and extreme weather events such as bomb cyclones may have serious impacts on the redundancy of plains spotted skunks.

In a different study, the probability of plains spotted skunk habitat selection was shown to increase close to certain types of fine-scale habitat features, such as rock piles, fencerows, and agricultural outbuildings. (White et al., 2025). Additionally, the likelihood of use decreased as the proportion of crop cover increased. This suggests that the plains spotted skunk thrives when it has access to taller and more complex vegetation which is not found in large-scale agricultural operations that dominate Nebraska and Kansas. Indeed, the size of farming operations in Nebraska has grown over the past decades and consolidation shows no signs of slowing. (Hiller et al., 2009). This trend eliminates fine-scale habitat needs and further endangers the future of the plains spotted skunk.

Finally, White et al. also found a strong negative relationship between tree cover and plains spotted skunk habitat suitability. (2024). Further, overall suitability was highest when even shrub cover was relatively low (White et al., 2024). The 2023 SSA treated effectively all of the Great Plains other than incompatible agriculture or urban development as equally suitable habitat for the plains spotted skunk, but if woody encroachment creates unsuitable habitat the species is facing serious threats now and into the future. Woody encroachment and aforestation are some of the biggest threats to prairie and grassland habitats (Symstad & Leis, 2017; USFWS 2024). Indeed, Nebraska lost more than 632,000 acres of grassland habitat to woody encroachment between 2000 and 2017. (Fogarty et al., 2020). The Flint Hills of Kansas was 46% more covered by trees in 2019 than it was in 2000; other Great Plains ecosystems saw comparable increases. (Londe et al., 2022). This type of encroachment is a serious present threat to the existing range of the plains spotted skunk, reducing its resiliency and redundancy and

putting it at risk for extinction.

IV. Contradictory Information Disclosure

Petition regulations require parties to offer "information that may contradict claims in the petition." (50 CFR 424.14(d)(5)). The only such information known at the time of petitioning is a recent rediscovery of a previously known population of Plains Spotted Skunks in south Texas. (Duffie & Henke, 2024). This rediscovery, while encouraging, does little to alleviate the obvious peril faced by the plains spotted skunk across large swaths of its historic range.

V. Conclusion

The population surveys and habitat suitability research presented in this petition must be evaluated in tandem. The plains spotted skunk is not a species with robust populations that faces threats in the future; it is an animal that may be already extirpated from much of its historic range and faces further threats as problems compound going forward. Given past population trends, current population survey results, and future threats to habitat and climate stability, the plains spotted skunk is in clear danger of extinction throughout all or a significant portion of its range. As such, we petition the USFWS to consider this new information and re-initiate a new status review to determine whether protections are now warranted under the ESA.

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